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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,064	04/28/2005	Hironaga Hongawa	1391.1067	5355

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EXAMINER

WONG, JOSEPH S

ART UNIT	PAPER NUMBER
2852	

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/533,064	Applicant(s) HONGAWA ET AL.	
	Examiner Joseph S. Wong	Art Unit 2852	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6 and 8-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 and 8-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to amendment filed September 14, 2006.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3-6,8, and 10-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sakai et al. (US 6898404).

With respect to claims 1 and 13, Sakai teaches a liquid development electrophotographic apparatus in which a toner image formed by developing a formed electrostatic latent image by use of a nonvolatile liquid developer is transferred from on image-bearing member onto a printing medium by a melt transfer process (as described in column 4, lines 30 – 35 where the toner is melted by increasing the temperature of the toner image to a temperature which is higher than the resin softening temperature), comprising: control means for controlling a viscoelasticity of a toner image on the image-bearing member by bonding toner particles of the toner image together by means

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of partially melting the toner particles (as described in column 4, lines 30 – 35 where the toner particles are bonded by partially melting the toner particles by increasing the temperature of the toner image to a temperature which is higher than the resin softening temperature), so as to cause the liquid toner to enter a softened condition having a carrier agent in inter-bonded-toner-particle spacing, the control means (as described by the control unit in column 4 line 37) causing the bonded toner particles to be separated from the carrier agent without causing the toner particles to be melted to such an extent as to be liquefied by maintaining the temperature of the toner at a temperature which is higher than the softening temperature; and carrier-agent-removing means for removing the agent from the viscoelasticity-controlled toner image, the carrier-agent-removing means having a surface in contact with the carrier agent caused to float by use of electric field force, and removing the carrier agent by moving the surface in a direction opposite a moving direction of the toner image as described in column 4, lines 38- 48 and shown in figure 5 by the reverse-rotating conductive collection roller; wherein the toner image is transferred onto the printing medium while the controlled dynamic viscoelasticity of the toner image is maintained (col. 4, lines 30-65, where the dynamic viscoelasticity of the toner image is maintained by controlling the temperature of the toner on the image-bearing body to “a temperature near or higher than a resin softening temperature”, well below the boiling point of the carrier agent; and a carrier-removing unit is provided which eliminates the need to excessively heat the image-bearing member). As indicated in applicant’s fig. 13 (B), the claimed range of the viscoelasticity of the toner corresponds to a “semi-molten” or softened condition. The specific range of

viscoelasticity of the toner which is not met by Sakai et al. does not impart structure to the claimed liquid-development apparatus. Alternatively, it would have been obvious to one of ordinary skill in the art to optimize the temperature and thus the viscoelasticity of the toner in order to optimize the image quality. Such temperature optimization would result in the storage and loss modulus properties of the toner corresponding to a softened condition range ($1\text{E}+05$ Pa to $1\text{E}+08$ Pa) since Sakai et al. teaches controlling the temperature of the image bearing body in order to optimize the viscoelasticity of the toner to be in a softened state. As such, the claimed properties and measurement conditions of the toner do not impart any novel structure to the claimed apparatus.

With respect to claim 3, Sakai teaches the liquid-development electrophotographic apparatus according to claim 1 as described above, further comprising heating means for heating the toner image formed on the image bearing member as shown in fig. 5 by the heater, wherein the viscoelasticity of the toner image is controlled in such a manner that the heating means heats the toner image to a temperature at which the toner image exhibits a target dynamic viscoelastic value, which is determined on the basis of a previously measured relationship between heating temperature and the dynamic viscoelasticity of toner particles contained in the liquid developer to be used as described in column 4, lines 30 –45 where viscoelasticity of the toner image is controlled by the controller by maintaining the toner temperature at a target dynamic viscoelastic value which is a previously measured temperature which is higher than the softening temperature of the toner which is the target dynamic viscoelastic value.

With respect to claim 4, Sakai teaches the liquid-development electrophotographic apparatus according to claim 3 as described above, wherein, when the toner image is heated, a temperature of the image-bearing member is controlled to a temperature lower than a boiling temperature of the carrier agent as described in column 4, lines 30 – 45 where the temperature of the image bearing member is maintained such that it is near the softening temperature of the resin, which is well below the boiling point of the carrier agent.

With respect to claim 5, Sakai teaches the liquid-development electrophotographic apparatus according to claim 1 as described above, wherein the carrier-agent-removing means is provided on the image-bearing member at a position located immediately before a position of transfer onto the printing medium as shown in fig. 5 where the reverse-rotating conductive collection roller is located immediately before the transfer position; bias voltage is applied to the carrier-agent-removing means to thereby move charged toner particles of the toner image present on the image-bearing body and softened by the viscoelasticity control means toward the image-bearing body, to thereby cause the carrier agent to float on the charged toner particles and the floating carrier agent is removed as described in column 4 in lines 55 – 65 where a bias voltage is applied to press toner against a toner-image-bearing body to thereby cause the carrier agent to float on the charged toner particles and the floating carrier agent is removed by the carrier-removing unit.

With respect to claim 6, Sakai teaches the liquid-development electrophotographic apparatus according to claim 5 as described above, wherein the

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carrier-agent-removing means removes the carrier agent in such a manner that, when the toner image is to be transferred onto the printing medium, a solid content of the toner image is between about 50% and 95% as described by the softened condition of the toner in column 4, lines 48-65, as the carrier-removing unit attempts to remove all of the carrier, and thus is about 95%.

With respect to claim 8, Sakai teaches the liquid-development electrophotographic apparatus according to claim 1 as described above further comprising a plurality of removing means for removing the carrier agent each time a toner image in each of a plurality of colors for color printing is transferred onto the image-bearing member, wherein the removing means move in the same direction as a moving direction of the toner images on the image-bearing member as shown in fig. 2 by items 15.

With respect to claims 10 and 11, Sakai teaches the liquid-development electrophotographic apparatus according to claim 1 as described above, further comprising means for applying bias voltage in such a manner that electric field force acts on the toner image in such a direction as to cause the toner image to move toward the printing medium in the course of transfer of the toner image onto the printing medium; wherein the means for applying the bias voltage applies the bias voltage between the image-bearing member and a backup roller; and the resistance of the image-bearing member is set to $1.0E7$ Ohm to $1.0E10$ Ohm as described in column 7 lines 34-40 and in column 9, lines 15-22.

With respect to claim 12, Sakai teaches the liquid-development electrophotographic apparatus according to claim 1 as described above wherein a rubber material is used to form an outermost surface of the image-bearing member from which the toner image is transferred onto the printing medium as described in column 9, lines 55 – 65.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by Ichida et al. (US 2004/0175208).

Ichida teaches a liquid development electrophotographic apparatus in which a toner image formed by developing a formed electrostatic latent image by use of a nonvolatile liquid developer is transferred from an image-bearing member onto a

printing medium by a melt transfer process as described in paragraphs 25-30, comprising: control means for controlling a viscoelasticity of a toner image on the image-bearing member by bonding toner particles of the toner image together by means of partially melting the toner particles as described in paragraph 106 where the temperature of the image bearing member is higher than the softening temperature of the toner, so as to cause the liquid toner to enter a softened condition having a carrier agent in inter-bonded-toner-particle spacing, the control means causing the bonded toner particles to be separated from the carrier agent without causing the toner particles to be melted to such an extent as to be liquefied; and carrier-agent-removing means for removing the carrier agent from the viscoelasticity-controlled toner image, the carrier-agent-removing means having a surface in contact with the carrier agent caused to float by use of electric field force, and removing the carrier agent by moving the surface in a direction opposite a moving direction of the toner image as shown in fig. 15 by the carrier-removing roller, further comprising printing-medium-heating means for preheating the printing medium to a temperature equal to or higher than a temperature of the image-bearing member before transfer of the toner image onto the printing medium as shown in fig. 1 by the preheating unit and described in paragraph 106 where the temperature of the printing medium is higher than the temperature of the image-bearing member.

Response to Arguments

Applicant's arguments filed 9/14/06 have been fully considered but they are not persuasive. Applicant states that the newly added limitations, "wherein the toner image

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is transferred onto the printing medium while the controlled dynamic viscoelasticity of the toner image is maintained" differentiates the claimed subject matter from the prior art (Sakai and Ichida). The applicant points to paragraphs [0013]-[0017] for support of the newly added limitation. Paragraph [0017] states that "in order to maintain the condition in which the requirement for the dynamic viscoelasticity of the toner image is satisfied, heating the toner image on the image-bearing member by the heating means may be controlled in such a manner that the temperature of the image-bearing member becomes not higher than the boiling point of the carrier agent and not higher than 100 degrees Celsius." Furthermore, As described in the above rejection with respect to claim 1, Sakai et al. (US 6898404) maintains the requirement for the dynamic viscoelasticity by maintaining the temperature of "the image-bearing body to a temperature near or higher than a resin softening temperature." Thus it is clear that the temperature of the image bearing member is well below the boiling point of the carrier agent. Furthermore, a carrier-removing unit (fig. 10) is provided so that the excessive heating of the image-bearing member is not necessary.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Remarks

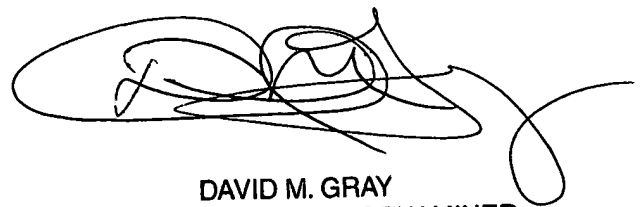
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph S. Wong whose telephone number is (571)272-8457. The examiner can normally be reached on Monday - Friday 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Gray can be reached on (571)272-2119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSW

Joseph Wong
Patent Examiner
Art Unit 2852
11/14/06



DAVID M. GRAY
SUPERVISORY PATENT EXAMINER